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SCHOOL AND SOCIETY

Volume XX SATURDAY, OCTOBER 25, 1924 Number 513

A PLAN FOR SECURING RATIOCRATIC CONTROL OVER EDUCATIONAL POLICIES[1]

ONE can neither justify nor condemn control over any human institution merely by saying that it is autocratic, or that it is bureaucratic, or that it is democratic; *i.e.*, exercised by one or by a few or by all of the persons concerned. There always remain two final questions in each particular case, namely, (a) Is the control reasonable? and (b) Is the form of control best adapted to securing reasonable control? By reasonable control I mean a control that is based upon good reasons which are definitely expressed and which can be clearly understood by those over whom such control is exercised. To such control I have given the name ratiocratic.[2] It is a new word, and although it is of hybrid origin its meaning is quite obvious, and it is the most satisfactory term which I have been able to invent as an embodiment of this meaning.

Our ultimate concern, I take it, is not whether any form of human control is autocratic, bureaucratic or democratic, but whether or not it is ratiocratic. Autocratic control can be justified whenever it is better adapted to securing reasonable control than can be secured by any other form of control. The ideal ruler, as Aristotle said long ago, is a perfect tyrant; *i.e.*, one who is perfect in wisdom, in judgment and in benevolent disposition toward those over whom he rules; and Church and State have not yet abandoned entirely their efforts to find rulers who are "infallible" and who "can do no wrong." In certain notable historic instances, indeed, it would be difficult to show that any other form of control would have been more reasonable, under the circumstances, than that which benevolent despots exercised while proclaiming "everything for the people but nothing by the people," nor have nations yet ceased to turn to dictators in crises. On the other hand, there are historic cases in which it would be equally difficult to show that any other form of control could have been more unreasonable than that which autocrats exercised. In a word, there have been good and bad autocrats—reasonable and unreasonable.

If we study the history of bureaucratic and democratic control we observe the same outcomes. Sometimes they are reasonable and sometimes not; and we are just now engaged in the twofold task of making the world safe for democracy and making democracy safe for the world. Or, to state the situation in another way, we are engaged in a struggle for the right to control ourselves and to make this control as reasonable as possible. Only to the extent that we are able to do both can democratic control be justified, for there have been, and still are, good and bad democracies—reasonable and unreasonable. Of this, history and present-day observation and experience furnish abundant illustration.

These general considerations enable us to understand why it is, after centuries of struggle to find some satisfactory form of human control, that we still have all forms and variations of it throughout the world. None of them seems to be universally best. Any of them, it seems, may be best according to time, place and other circumstances and for periods of greater or less extent.

[1] A paper read at the meeting of Section Q, American Association for the Advancement of Science, held at Cincinnati, Ohio, December 29, 1923.

[2] Pronounced rash-i-o-crat-ic.

Perhaps it may be so to the end of time. At all events, we can neither condemn nor justify any of these forms of control by calling it a name, whether autocratic, bureaucratic or democratic. Regardless of the form, our decision must turn upon the question as to whether or not it is ratiocratic—whether or not the person or persons in control are able to give good reasons for what they do and for the manner in which they exercise their authority. So long as this control is reasonable, whether exercised by one or by a few, or by all concerned, it is satisfactory; otherwise, sooner or later, either the person or persons in control or both are overthrown. Such are the lessons of experience, and while few of us may care very little about exercising any form of control, direct or indirect, most of us will continue to insist on being well-governed, *i.e.*, reasonably. Progress in government consists of finding plans which secure a larger degree of reasonableness.

With this much of general background let us turn our attention to the problem of control over educational policies. Is there any way of insuring a more ratiocratic control in this field of human activity? Is there any plan which can accomplish this object and at the same time silence the insistent outcry against autocracy in the administration of schools and colleges? Is there anything better than the movement in recent years to organize protective unions of teachers and professors affiliated with organized labor? Is there any way of satisfying the reasonable objects of such unions without the strife and bitterness which union methods entail? Is there any plan which can bring the practice of educational administrators into harmony with their preaching? I think there is a plan which can realize all these objects.

The problem for which we are seeking a solution grows out of conditions which the above questions imply, and these conditions are so familiar that only the very briefest reference to them is necessary here. And may I remark, in passing, that college presidents and school superintendents themselves, in most instances, fully realize that the time is at hand when some sort of fundamental change of policy in educational administration is called for.

Let us take, for illustration, the situation with respect to school administration, as contained in the confession of an eminently successful large-city school superintendent[3] who is now head of the Department of Education in one of our important graduate schools.

> In respect to concentration of power and responsibility, no other type of educational position in America compares even remotely with the city and large-town superintendency, developed to the most generally and highly approved degree. By contrast, the power of the university presidency, public or private, seems insignificant; its responsibility, vague and indefinite. . . . The demands made upon the superintendent are capable of satisfactory fulfillment only by supermen, not even by superior mortals. . . . There is grave danger that the extreme concentration of power and responsibility in the superintendency together with a logically consistent organization that extends this principle throughout the system, will tend to the development of conditions that will make public educational organization even more effective than heretofore in its process of repelling and dominating independence, self-confidence, and aggressiveness, and of attracting and holding dependence, passivity and timidity.

Let us also take a page from the writings[4] of another leading American educational thinker—a thinker, by the way, who has said much in recent years as a champion of democracy:

> Unqualified obedience is the first rule of efficient service. The classroom teacher owes this to his supervisors, and whenever he can not yield such obedience, his resignation is the only alternative. . . . The situation is entirely analogous to that in any other organization or system—the army, the

[3] F. E. Spaulding, "The superintendency as a career," SCHOOL AND SOCIETY, Vol. XV, p. 31.

[4] W. C. Bagley, "Classroom Management," Chapter XVII.

navy, governmental departments, great business enterprises. . . . Concentrated effort can be secured in no other way. . . . Youth is prone to resent authority. Indeed, it is hardly too much to say that our contemporary theories of education do much, perhaps unconsciously, to inculcate an attitude antagonistic to authority. . . . The superintendent demands . . . results of his principals, the principals pass on the demand to the classroom teachers, the classroom teachers exact the required work from the pupils. . . . Centralized authority working through intermediate officials is the only known method of insuring economy of school administration.

There can be no doubt that the conditions so boldly expressed by these two educational leaders are deeply rooted in American school organization and administration. We have everywhere lay boards of education, constituted in various ways, with superintendents of schools whom such boards select as their executive officers. These boards hold these officers responsible for the development of educational policies, with the inevitable consequences indicated in the quotations just cited. Under such circumstances there is an almost irresistible tendency toward autocracy in the control of educational policies. But we are not warranted in making a wholesale condemnation of this arrangement merely by calling it autocratic, for, as I have already admitted, there are good and bad autocracies. It can not be doubted, indeed, that schools sometimes show a high degree of progress and efficiency under such a system of control. Nevertheless, since there are no supermen, and since school superintendents can not have that intimate knowledge of all the facts and points of view which are so necessary in reaching reasonable decisions, such control is very likely to be bad at times and in important respects. "But even if school superintendents were supermen," says one writer,[5] "what a pity to make principals dwarfs and messenger boys." And the same might be said with regard to teachers.

To remedy this situation the American Federation of Teachers was organized and became affiliated with the American Federation of Labor. Boldly asserting its belief in democracy and in the schools as the chief agency of democracy, that organization declares that the schools are falling short of their highest attainment on account of undemocratic administration. In the preamble to its constitution it also declares:

> We believe that servility breeds servility, and that if the schools are to produce free, unafraid men and women, American citizens of the highest type, the teachers must live and work in an atmosphere of freedom and self-respect.

Furthermore, says this preamble, "the teachers must find the remedy, if it is to be found." In other words, the cure for autocracy in school control, which this union proposes, is in every essential respect analogous to the well-known doctrine of the dictatorship of the proletariat.

I have watched the activities of this organization from the beginning with much interest and no small degree of sympathy, but I have never been convinced that the remedy which it proposes is the correct one, if, indeed, it would be a remedy at all. I do not believe in, and I do not think that the situation calls for, the dictatorship of any one. Nor is there any guarantee of a better order of things merely as a result of a change in dictators. On the contrary the situation in this case would in all probability be worse. At all events, there can no good come out of close unions of teachers, principals and superintendents pitted against each other, leaving questions of educational policy to be determined merely by a test of strength. Hence I was one of the first to openly oppose the methods of this organization while in sympathy with some of its objects. Desirable ends do not call for the use of undesirable means.

[5] John Louis Horn, "The American Elementary School," p. 94.

A much more promising solution is suggested by Dr. John Louis Horn:[6]

> If the defect is to be remedied, the educational powers now held by the superintendent must be shared with principals and teachers. It is not enough that the superintendent consent to hear teachers; he must give up the sole authority of ultimate decision. . . . It is necessary that teachers and principals be represented as a parliament or congress, not simply to make suggestions, but to share in the making of ultimate decisions. The educational authority which the lay board of education rightfully refrains from exercising should be turned over not to one person, but to a body of educators.

We have here, in my judgment, the principle that points out the direction in which the most satisfactory solution of the problem lies. Translating it into practicable concrete terms, my plan is this:

(1) Just as the final determination of educational policies is left to a board of education, and not to one person, let the formulation of these policies be entrusted to an executive staff having an equal number of persons of which the superintendent would be chief. If the board of education has seven members, for example, let the executive staff consist of an equal number, including three principals and three teachers, representing elementary, intermediate and high schools.

(2) Let the board of education determine the qualifications of the elected members of this staff in terms of age, educational and professional qualifications, experience and success, and let them be elected by a vote of the principals and teachers, respectively, concerned in these three grades of schools. Assistant superintendents and supervisors are represented by the superintendent himself, whose assistants they really are.

(3) Let this executive staff meet regularly twice per month during the school year, and unless there is unanimous consent, let there be no action on any matter of educational policy at the same meeting at which it is proposed.

(4) When any matter is voted upon by members of this staff, let each member be required to file the reasons for his action with his vote.

(5) Let staff action be transmitted to the board of education by the superintendent, acting as chief, and let his report include an exhibit of the vote of each member and the supporting reasons.

(6) Let the relation of the board of education to actions of the executive staff be similar to that of a final court of review, and let the board accept responsibility for approving or reversing staff decisions, or for referring the same back to the staff for further consideration, with reasons for the same.

There isn't time for lengthy argument in support of this plan. My brief is this:

> It insures ratiocratic control by requiring reasons for action.
>
> It removes all grounds for crying "autocracy" and "servility" by giving to principals and teachers a voice in shaping the policies under which they serve. Under such a plan they would find it easier to look upon themselves as servants of the community and not as employees of the board of education and superintendent because these officials happen to be the immediate parties concerned in their selection and appointment.
>
> The requirement of reasons for action will prevent arbitrariness and action for which good reasons can not be given.
>
> The representative character of the executive staff will insure a fuller basis of facts upon which decisions should be based.
>
> The plan is well adapted to the psychology of well-educated and professionally trained persons, and harmonizes with their conceptions of the dignity and significance of professional life. The need of such a plan increases with the number of such persons engaged in school work and will be a means of attracting such persons in greater numbers.
>
> It is consistent with American notions of government and removes the contradiction that arises from an attempt to train citizens for a representative democracy under a form of school control which is glaringly autocratic.

[6] See his "The American Elementary School," pp. 95–96.

It makes it possible to take counsel with all members of the school corps. Principals and teachers will express themselves freely to their chosen representatives, without the restraints which their relation to the superintendent naturally imposes under present arrangements.

It would be more effective than the "advisory councils" of principals and teachers which have been proposed and even provided for in a few places. That is merely autocracy taking counsel, or graciously listening to it, and not parting with power. There is no more reason for placing the responsibility for recommending educational policies in the hands of one person than there is for placing the responsibility for adopting such policies in the hands of one person instead of a board, or for placing the responsibility for the ultimate decision of legal questions in the hands of a single judge instead of a Supreme Court of nine members.

Nor is there time to analyze the situation with respect to the control of educational policies in colleges and universities, and to suggest the manner in which this same principle can be applied to advantage there. I close, therefore, with the frank admission that the plan suggested awaits a demonstration as a test of its utility, but I submit a challenge to put the plan to a fair test. Experiment can give us science; and science, from the very nature of its calling, is reasonable. Let the plan be put into the crucible of science. The results, if I may venture to prophesy, will be full of pleasant surprises.

W. P. BURRIS

PROFESSOR OF EDUCATION,
UNIVERSITY OF CINCINNATI

REPEATED MEASUREMENTS OF THE PHYSICAL AND MENTAL DEVELOPMENT OF SCHOOL CHILDREN[1]

THE need for repeated observations of the mental and physical development of school children during the period of growth has long been recognized. The writer's first interest in the problems involved began with a study which showed the comparative constancy maintained in the relative standing of pupils in their progress through school as judged by school marks.[2] The majority of individuals studied were shown to have maintained approximately the same rank in the grade school, high school and college; subsequently it was shown that relative standing in college is a good index of relative standing in the professional schools.

Repeated measurements of physical growth have similarly disclosed facts which previous comparisons in terms of the averages of different age groups had missed. The extent to which individuals maintain throughout the period of growth their initial superiority or inferiority in physical stature, weight, etc., has been graphically shown by the studies of Camerer, Wissler and Baldwin. So, too, the most significant result from the repeated application of mental tests to the same individuals has been the demonstration of the relative constancy of the intelligence quotient under similar conditions of environment and training.

The above cited studies have, for the most part, dealt with a single measure or criterion of development. For further analysis of growth a combination of these tests, physical or physiological, mental and scholastic, needs to be applied to the same individuals at regular intervals during their growth. We may then differentiate more clearly than is now possible the relative influences of endowment, maturity and training in the development of the individual and thus rest the diagnosis and prognosis of problematical cases on a securer basis.

With the aid of a subvention from the Commonwealth Fund such a comprehensive

[1] Read before the Section of Education, American Association for the Advancement of Science, Cincinnati meeting, December, 1923.

[2] W. F. Dearborn, "The relative standing of pupils in the high school and in the university," Bul. Univ. of Wisconsin, No. 312; High School Series No. 6, Madison, Wisconsin, 1909.

study was inaugurated last year by the writer at Harvard University. Approximately 5,000 school children were examined, 3,000 of them being in the first and second grades of school. These latter children are now being reexamined, and it is proposed to repeat these examinations on as many of them as remain in school at yearly intervals over a period of ten or twelve years. The remaining 2,000 of the initial group were examined for various special purposes. Among these are 600 individuals at the Massachusetts School for Feebleminded who were examined in order to have one group for comparative purposes in whom the course of growth is recognized to be in essential respects abnormal.

Upon all these individuals the following groups of tests have been applied: First, physical or physiological tests. Among these are included height and weight and bodily proportions, dentition and ossification as shown by X-ray photographs of the carpal bones. Secondly, mental tests. Two group tests of intelligence have been given at a short interval, supplemented in many cases by individual tests. Thirdly, scholastic tests. In the first grade tests of arithmetic or number sense were given and in the second grade arithmetic and reading tests. The scholastic tests are also supplemented by the detailed and recorded observations of teachers, and new tests will be added as the children advance in the grades.

The most outstanding accomplishment has been the measurement of 5,051 X-ray photographs of the ossification of the carpal bones. The measurement of the photographic plates called for an exacting technique which has been largely developed by Dr. Daniel Prescott, research assistant in this investigation. The results of the study of the first 3,000 cases have been presented in a recently published monograph on "The determination of anatomical age in school children and its relation to mental development."[3] Important age, sex and racial differences in growth have been shown in this study and in further studies now in progress by means of this method of investigation.

The series of physical measurements comprise fourteen separate measures of each individual. From these it will be possible to note the changes in bodily proportions with growth. Various indices or ratios are being calculated. One of the purposes of this part of the investigation is to determine which of the variously proposed anthropometric indices are most significant of growth changes.

Records have been made of the deciduous and permanent teeth present in the case of each child at the time of his examination. Although there have been extensive investigations of this subject, there are many difficulties in using the available material to establish standards from which "dental ages" may be determined. A method for calculating dental age as proposed by Matiegka[4] for which he has established norms on the school children of Prague is one of the methods which is being tried out.

As for the measurement of intelligence, it is recognized that the group methods employed are in an experimental stage. We are accumulating evidence in regard to their reliability when used by capable examiners. We have found that the training required for successful group testing is scarcely less than that now commonly required in the preparation for individual examining. One reason for the unreliability of the group test as compared with the individual test is that the examiners have not usually acquired a corresponding

[3] D. A. Prescott, "The determination of anatomical age in school children and its relation to mental development," Harvard Monographs in Education, Series I, No. 5, Graduate School of Education, Cambridge, Mass.

[4] Matiegka, J., "L'âge dentaire comme signe du développement total," *Rev. Antropol.*, Vol. XXXI, 1921, pp. 333–35.

skill in the giving of tests to groups, and it is a different sort of skill from that required in individual testing.

In order to check the results of the group tests of intelligence over 1,000 of the children have thus far been examined by the Stanford Binet.[5] It is planned to distribute the individual examinations so that all cases may be examined at least once in every few years. The group tests give practically the same distributions and approximations to the Gaussian curve as do the individual tests and are well correlated with each other and with the Binet tests.

The main results of investigation await, of course, the successive repetitions of the tests, although many subsidiary problems have been attacked with the data now at hand. Some of the conclusions of the latter studies based on the first series of measurements and such of the second series as have been completed to date will be presented in a paper by Mr. E. A. Lincoln at a later session of this section. The methods of analysis which we expect to apply and which we hope will lead to profitable results may be indicated by a consideration of the following findings in regard to racial differences.

In one of the communities studied there are about equal numbers of Italian children, Jewish children and children of an older "American" stock. The Jewish children rank highest in mental age and in intelligence quotients, then come the American children and last the Italian. In anatomical development, as indicated by the stage of ossification of the carpal bones and expressed in terms of anatomical ratios, the Jewish children are far ahead of the other two racial groups. The Italian boys appear slightly more developed than the American boys, whereas the American girls are a little more developed than the Italian girls. The small differences between these latter groups may be affected by a wider sampling of cases, but the position of the Jewish group can hardly be changed.

Taking for purposes of illustration this outstanding difference of the Jewish group, we should be inclined to argue that the superiority in intelligence was in part due to the greater anatomical and probably corresponding physiological development; that they are, in other words, simply further along in the stage of growth; that the slower growing American group will either develop for a longer period or that their growth will be more accelerated during its latter stages, *e.g.*, at the adolescent period. So that at the completion of the period of growth the initial disparity between the intelligence of the two groups would disappear. This result would depend upon the duration of the period of growth and the amount of later acceleration. If both factors were operative, the American group may in the end excel in intelligence. A member of another race might well be inclined to argue otherwise! A solution of such a problem must await the comparisons of the yearly increments in anatomical, physiological, mental and scholastic development.

The above illustration suggests a comment on the much discussed differences in the intelligence of negro and white children. It would appear from the use of such intelligence tests as the Stanford Binet that negro children are relatively brighter in the early years than in the later years, that at school entrance, at about the age of six, they are the equals in intelligence of white children of the same social status, but that with each successive year they are progressively less bright as compared with the white children (see, *e.g.*, Miss Arlitt's study).[6] Gordon,[7] in a sig-

[5] The findings have been discussed in an as yet unpublished thesis by Mary M. Wentworth on "Individual differences in the intelligence of school children."

[6] Arlitt, A. H., *Jour. of Applied Psych.*, December, 1922.

[7] Gordon, Hugh, "Mental and scholastic tests

nificant study recently made in England, by means of the Stanford Binet tests, of physically defective, canal-boat and gypsy children of little or no schooling, has made exactly the same finding. He has shown that at age six these children are on the average of normal intelligence with intelligence quotients between 90 and 100, according to the test, but that with each successive year the intelligence quotients decrease on the average until by the age of ten or twelve they average .70. The older children in the same family are relative to their life age less intelligent than the younger children. Racial differences can hardly be responsible for these findings. Gordon attributes the results to lack of schooling and social isolation and presents what seems to the writer conclusive evidence in support of this contention. He finds positive correlation between the amount of school attendance and the mental and educational ratios of these children and a high positive correlation between their educational and mental ratios. The possible bearing of these results on the current comparisons of negro and white children is evident enough and shows the necessity of more careful control in such comparisons of the factors of training and environment. These illustrations will suffice to show the possibilities of the present investigation in which it is proposed, to summarize by way of conclusion, to determine not only present differences but the changes which appear in the physical, mental and scholastic attainments of children during the period of growth.

WALTER F. DEARBORN

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among retarded children," Board of Education, Educational Pamphlets, No. 44, London, 1923. Gordon's study has been reviewed by the writer in considerable detail in "Form board and performance tests of intelligence," Harvard Monographs in Education, No. 4, Cambridge, Mass., 1923.

SCIENTIFIC METHODS IN THEIR APPLICATION TO ELEMENTARY EDUCATION[1]

A RECENT volume devoted to the analysis of the thinking process points out that thinking is frequently carried on by human beings in much the same way as is the activity of dogs taken along as companions on a walk. They nose about here and there, sniffing and smelling in thickets, following bypaths back and forth over the same ground time and again. Sometimes such dogs run across interesting things in the course of their ramblings, and sometimes, too, human beings, in their aimless and undirected thinking, have brought about valuable discoveries. But such occasions have been comparatively rare, and the energy and time wasted in the process has been immeasurable.

This analogy might be carried further, over into the field of education. Is it not true that until comparatively recently the educator, in his ever sincere and honest attempts to educate, has frequently rambled hither and yon, often without any well-thought-out plan and usually without any careful record and analysis of results? Has there not been a maximum of energy expended with a minimum of results obtained?

The history of progress in all fields of endeavor shows it to be a growth. Even where this growth seems to be interrupted by a revolutionizing discovery on the part of some thinker, nevertheless, as a whole, progress is a growth. This is no less true in the field of education than elsewhere, and this rambling hither and yon in efforts to progress is but a stage of growth—a stage corresponding to similar stages in other fields.

[1] This paper was read at the meeting of Section Q of the American Association for the Advancement of Science, held in Cincinnati, December, 1923.

Take science for example. Previous to the time when Bacon laid the foundations of the modern method, its progress came largely through accident or through trial and error. And it was a long, long time after the way was pointed out before science could be said to have evolved its "method." Now I do not mean to say that education to-day is in the state that science found itself then. Hopefully, it is beyond that point, of course, but I do mean to point out that there is a similarity in the development of knowledge in its various fields, and that education has lately come to the point in its development of realizing that it must evolve and apply a method just as has science evolved and is applying a method —and one that will stand the test of critical analysis.

But though education is behind science in respect to its procedure, it is not so far behind as are some other activities. Only now is it beginning to dawn upon us that in the realm of social relationships some method of adjustment must be worked out that will be scientific. Very little has actually been done, as yet, upon this problem, but sociologists are agreed that if we are to meet successfully the problems that are confronting the world to-day, there must very soon appear a social science that is something more than science in name.

It has been said that education must evolve and apply a method just as science has done. How far is it reasonable to expect that the method that education will eventually evolve will be identical with that of science? Will it be the "scientific method" itself applied to education, or will it be the scientific method with modifications or with reservations?

Education is closely allied with individual behavior. How the mind of the individual will react under given stimuli offers a vast field for investigation. It is but comparatively recently that the scientific method has been applied to psychology. The progress made has been great, but much remains to be learned. Education must wait upon the advance of psychology for its own development.

So, too, education is closely allied with group action. The laws of group action are but slightly understood. Until they are reduced to principles, education in all probability must again delay its own advance.

Here, then, are two reasons that make difficult the answer to the above question—will the method that education eventually evolves be wholly scientific, or only partly so? Until we know more about psychology and probably until we know more about the laws of group action, this question can not be answered with entire satisfaction.

We have long been told by educators that results in education can not be evaluated as can they in other fields; that the greatest work of the teacher appears elsewhere than in the classroom; that the lives of his pupils hold the measurement of his efforts and that these can not be analyzed with such accuracy as will justly evaluate the teacher's work. There is much truth in this. But what is there in such a statement that would preclude the value of objective standards and the necessity for their use as a tool for the extension of the influence and power of the teacher and of the efficiency of education? We may recognize that some factors in the educational process are difficult to evaluate and some results at present immeasurable, but we must insist upon measuring those factors that we can, and we must continually attempt to discover new ways of measuring.

What are the methods of science that can be applied to education? We are told that there are certain definite and orderly steps in the process of thinking. The first of these consists of the clear definition of the question, together with the observation of all the facts concerning it and their classification. This step having been taken,

there immediately arises in the mind of the thinker a number of possible answers. Whereupon, the third step appears, namely, the selection, by means of testing, from the more or less numerous suggested answers, of the one most likely to be correct. Finally, the careful thinker will seek to justify his decision by confirming evidence. This is the theoretical order of the process. In actual thinking, the variation or blending or overlapping or even the leaving out of one of the steps frequently occurs, and thinking then becomes blurred and conclusions false. Even in examples of good thinking, it is not to be expected that this order is always in evidence. The mind is too complex a thing for that. Then, too, the problem concerned may be a tangled one. The various branches of science pursue different plans, and the solution of a problem in mathematics may be very different in appearance from equally good thought concerning one's conception of an infinite being. Yet it remains true that good thinking in any field will not violate the principles here noted.

In the effort to avoid the unsatisfactory results of poor thinking, science has insisted that sound principles in the use of thought be followed and it is the application of these principles upon the innumerable riddles of nature that, in part, comprises what is known as "method" in science. Add to this the demand that this thought process begin by facing facts rather than theories, and we have what is known as the "modern scientific method." Can this method be applied to education? To the extent that it can, education becomes scientific.

In seeking to answer such questions as "What are the methods of science applicable to education?" and "How far can they be applied?" education finds itself precisely in the position that science did when it sought to develop. Education sees clearly to-day that its growth must come through the investigation of a great body of data, much of which lies close at hand, ready for classification, analysis and testing. For centuries before the modern era, the world had been assiduously collecting data upon almost every conceivable subject. Most of these were unclassified, unanalyzed and unconfirmed. Many of the conclusions, therefore, were false. The Ptolemaic theory of the universe is a good example of this. Here was a theory, the result of extensive observation of facts collected for centuries. It, apparently, explained most of these facts satisfactorily. Came Copernicus, with a new theory, based upon observations of the same facts which also seemed to explain them satisfactorily. Why do we, after a century or two of doubt, accept the one theory and reject the other? Because it is simpler? Yes, in part. Because it seems to be confirmed by other theories? Yes, in part. But mainly because of the discovery, collection and classification of new facts which form a great body of confirming evidence—the test—of Copernicus's opinions. So education must in some way test its theories by the investigation and reclassification of data and, above all, by confirming or disproving them with new facts.

And just as the progress of science was at first retarded by a lack of the tools of investigation, so is education retarded by a similar lack. What did more than anything else to wipe away all doubts about the organization of the universe was the invention of the telescope. This tool brought to the astronomers new facts which stilled the controversy forever. Science developed the machinery of investigation as investigation itself progressed.

Education to-day is seeking new tools that will confirm or disprove the theories of educators by this same process of discovering facts. Educational tests and measurements may yet become to education what the telescope was to astronomy. If this figure seems extravagant certainly it will not be contradicted to say that educa-

tional tests and measurements constitute the machinery of investigation that education must develop for the gathering of new facts that will test its theories. Therefore, it is evident that the extent to which scientific methods can be applied to education will always be limited to the extent to which this machinery is developed.

So much for theory.

Since education is coming more and more to be established upon a fact basis, what are some of the actual problems that are susceptible of scientific treatment?

To attempt to list in full such problems would be in effect to subdivide the whole subject into its various activities, for it has been demonstrated that scientific research can be applied to the various phases of education. The effectiveness of such application will vary somewhat, but this is increasing steadily as methods become refined and as the before-mentioned tools and machinery of investigation are developed.

This paper is supposed to pertain particularly to elementary education. What has been already said is general in its nature. It is, however, applicable to elementary education in all instances. From now on I shall try to limit my observations to the field of elementary education exclusively. Let me name some of its more important aspects capable of benefiting by scientific research. These may be said to consist of three kinds of problems.

First, those having to do with administration and supervision.

In this class the first to be listed is the problem of classification. Within a system pupils are usually classified according to two considerations — intelligence and achievement. Upon the basis of intelligence a good school system will be organized into classes for the normal, the gifted and the dull or deficient, and the classes for normal children are often divided into three groups according to ability. Such a classification can be made with any degree of efficiency only if scientific methods are employed. Tests and measurements so far developed for such purposes admittedly leave much to be desired, but without their use, imperfect though they may be, any attempt at such a classification as is here mentioned would be futile. This classification having been made, it is sometimes modified by the results of achievement tests, for there are exceptions to the rule that a child's ability to progress through the grades is measured by his I. Q. For this reason scientific measurements of achievement should not be neglected for purposes of classification.

Promotion and retardation are closely allied to classification. Here the same two considerations, achievement and intelligence, are used as a basis. Although in the past the greater consideration has been given to achievement, we are more and more coming to ask, not "Has the pupil done the work of the past grade?" but rather "Is he able to do the work of the next?"—and we are basing our answers to these questions upon data gathered scientifically by means of tests and measurements.

Measuring school efficiency is a broad term. It implies the evaluation of all the factors that make up the school product. Such evaluation, to be anything more than opinion, should be the result of the collection of data of various kinds, their classification and analysis. Measuring the efficiency of a school or school system may serve two purposes: (1) As a preliminary to intelligent supervision and management, or (2) as a checking-up process. In either case one of the vital factors of its value will be its basis upon facts. In other words, to be of value it must be scientific.

Teachers exist for the purpose of directing the progress of children through school. Their value is measured by their ability to do this successfully. Therefore, to measure a child's progress is to measure the value of the teacher. To be sure, there always exist limitations and contributory causes to a

child's progress. This modifies the above statement to the extent to which these things do exist. We can say, however, that the progress of the child is one of the main factors, if not *the* main factor in the value of a teacher. This statement is in no way intended to discount the value of those immeasurable things the teacher contributes. Any system of teacher-rating which is not based, in part at least, upon the measurement of the progress of pupils is incomplete to that extent. Here again education employs to its advantage the scientific method.

So with these four considerations of administration and supervision—classification, promotion, efficiency and rating—let us pass on to problems dealing with instruction.

The outstanding method of science here is in the use of achievement tests for purposes of diagnosis. The work of the elementary school lends itself to the use of diagnostic tests more than does that of the junior high or secondary school because of the type of work and of the more simple or more clearly understood or greater agreement as to objectives. The desirability for their use is no greater here than elsewhere. In such subjects as handwriting, reading, spelling and arithmetic, diagnosis can be used with accurate and beneficial results. History and geography lend themselves not so well to this method, yet much that is valuable as to desirable remedial methods can be learned in these subjects. Adapting instruction to the needs of individual pupils ought to be one of the large objectives of the modern school. To do this it is necessary to know those needs. The development of achievement tests should proceed to the point where worth-while tests will be available in all the subjects taught to children. This will enable teachers to learn the weaknesses of their pupils in a prompt and scientific manner. They can then adjust their instruction so as to overcome those weaknesses in so far as the child's abilities permit. Here is a tool of education which must be developed precisely as the tools of science were, in order that education may have a "method" that will be scientific. The need is seen. The beginning has been made. The work must continue that education may advance.

The third class of problems capable of scientific treatment is called, for want of a better name, problems of general research—this in contradistinction to the problems in the special fields of administration and supervision and of instruction. Here we have all those problems of elementary education outside of these two fields which have to do with the procedure of education in its effort to attain its ends. Methods and devices, economy of time, the course of study, school organization, text-books, the personnel of the teaching staff, all these, and many others, are valuable to the extent that they are helps to education in achieving its aims. Do we desire to judge them, we must ascertain the extent to which this has been accomplished. For instance, if we wish to know the value of a certain text-book in geography, we can find out by measuring the amount of help it has been in teaching the subject. To do this accurately necessitates scientific treatment. Or, if we wish to know whether or not the course of study is functioning, we can do so by finding out if it is accomplishing its objectives. This, again, can be learned through the application of scientific methods of investigation. The extent of this class of problems will be large, for they are constantly arising in every school system and continually demanding answers. These can be found only by the use of scientific investigation and analysis.

In brief résumé, then, we have said that education has lately come to see that it must develop a method that will conform to the best practice of correct thinking as exemplified by the usages of science. In its

effort to do this it has progressed through various stages surprisingly like those through which science itself passed. As to the extent to which the method, which education will eventually perfect, will coincide with the method used by science no one to-day can say. The development of psychology and probably of sociology will have much to do with the answer to this question. Education will develop toward this end no faster than it can develop its own tools of investigation—achievement tests and intelligence tests—which to-day are admittedly imperfect. The problems of elementary education capable of scientific treatment may be classified under three headings: (1) Those of administration and supervision; (2) those of instruction; (3) those of a general nature comprising such as serve the ends of elementary education—and not included in the previous two classes.

In brief, education to-day is not scientific. It probably will not be to-morrow. It may never wholly be, but education neither to-day, to-morrow nor at any future time can afford to underestimate the value of the scientific method in its procedure.

HERBERT D. BIXBY
CLEVELAND, OHIO

EDUCATIONAL EVENTS

A LUTHERAN COLLEGE FOR INDIA

THE American Lutheran Board of Foreign Missions is planning to help in the building of a Christian College in India which will cost $500,000. The purpose of the projected college is to lay a foundation for the extension of general education among the masses of the population of the Indian Empire. The college will be located in the Telugo district.

Lutheran agencies have for many years carried on a large share of the Christian missionary effort in India. Seven of these agencies are American and they have 60,000 communicants in India, 47,000 of which are attached to the stations supported by the United Lutheran Church in America. Nine agencies are European organizations with an aggregate of 155,000 communicants.

The Lutheran Church has about 300,000 communicants in India. A large part of this work was built up by the German missionaries who have been laboring in India for several hundred years. Since the World War, when German missionary work was suspended, these converts of the German missionaries have organized themselves into a self-governing body not attached to any other branch of the Lutheran Church but agreeing with all the branches in faith.

The Board of Foreign Missions of the United Lutheran Church was authorized by the last biennial convention to cooperate with other evangelical missionary societies and boards in the establishment of a college in the Telugo area, provided certain requirements were fulfilled. At the next convention it will be asked to raise $300,000.

All indications are now pointing toward the establishment of this college in the Telugo area in which our church has been asked to take a leading part, said a statement issued by the American Board. Our church must not fail here. Of the $500,000 named, not less than $300,000 should be raised for this high endeavor to dominate education in India by Christianity. The financial inability of the other Protestant missions in the Telugo area to cooperate for the present in this college on the basis of equal contributions, makes it necessary for our mission to strive to secure enough to begin this great educational enterprise in the hope that later others may furnish their shares.

ENGLISH LABOR AND THE UNIVERSITIES

ANSWERING the statement of "a distinguished member of the Labor Party" directed against the use of Oxford by Labor, the Lord Chancellor of England, Viscount Haldane, discussed popular *versus* scholarly education at the third annual conference, held in Manchester, recently, of the British Institute of Adult Education. The distinguished member had said that Labor did not need Oxford and that, if a man was able to read, all that he needed was to take up a book and then he could get the higher education without the necessity of going to a university with an old Tory tradition.

Lord Haldane, as reported in *The Times Educational Supplement*, wholly dissented from that view. He said that a man could not profit from books unless his mind were trained so as to free it from a number of hindrances which prevent it from entering into the subject matter of the books that are really worth study. Only a trained mind can reach the level of the higher education.

We live, said Lord Haldane, in a day of great progress in all sorts of education for the democracy, as seen in the growing popularity of the higher types of music, in women's institutes, in university settlements, and in popular lectures. All these are valuable and useful, but they do not give to the democracy that kind of mental training which would put the democracy on a level with the small and privileged class which has enjoyed that mental training hitherto. Without toil of the spirit, continued Lord Haldane, one can not get to these best things. The higher education can only be attained through training like that which men go through who wish to win a race. They must consort with those who are of the higher order of excellence in mental things. It is the universities who collect the highest teachers.

Among other speakers at the Manchester conference were Sir Henry Miers, vice chancellor of the University of Manchester; Dr. Percy Nunn, professor of education in the University of London; Mr. G. Unwin Meir, of Ruskin College, and Sir William Dawkins, of Manchester. In a discussion of "Adult education and the student," Sir William declared that there are "too many books, too much reading, and too much bookish knowledge. One half of the books in the world to-day could be burnt with beneficial advantage."

A message from Prime Minister Macdonald to the conference included these words:

> We are only beginning to understand the importance of adult education. Unless we keep our adults in contact with those influences which make mature minds and keep them ripening into an ever richer fullness, our people will suffer from arrested development, and the education they get in their youth will be largely wasted.

THE FEDERAL MATERNITY AND INFANCY ACT

$1,688,047.12 has been expended by federal and state governments to promote the welfare of mothers and babies under the Federal Maternity and Infancy Act during the first 15 months following its passage.

This statement has been made public by the Children's Bureau of the U. S. Department of Labor, in connection with the forthcoming first official report of the administration of the Maternity and Infancy Act, passed by the Congress on November 21, 1921. The report covers the period from March 20, 1922, when the first national appropriations became available, until June 30, 1923, and was prepared by Dr. Anna E. Rude, of San Francisco, former director of the maternity and infant hygiene division of the Children's Bureau.

Federal grants to the states during this period for maternity and infancy work totaled $1,046,523.56. State appropriations made to match federal funds totaled $641,523.56. In 1922 payments were made to 43 states, 28 of which matched the federal grant in full or in part. In 1923, 41 states received grants for maternity and infancy work, 35 of which matched the allotment in full or in part. By June 30, 1923, all state legislatures had met and the appropriation acts passed enabled 40 states to cooperate during 1924, all but Kansas, Illinois, Louisiana, Vermont, Maine, Massachusetts, Connecticut and Rhode Island. By action of its state legislature in July, Louisiana for the first time accepted the act and will receive its share of 1925 federal funds.

National administration of the maternity and infancy act is vested in the Children's Bureau and has been carried out, states the report, by the bureau's division of maternity and infant hygiene, the staff of which has consisted of six people—a medical director, associate director, a public health nurse, an accountant, a secretary and a stenographer. Plans for state work are initiated and carried out by a state agency, usually the child-welfare or child-hygiene division of the state board of health, and approved by the Federal Board of Maternity and Infant Hygiene.

The maternity and infancy act has already demonstrated its value, according to the report, in that it has:

(1) Stimulated state activities in maternal and infant hygiene.

(2) Maintained the principal in local initiative and responsibility.

(3) Improved the quality of the work being done for mothers and babies by disseminating through a central source—the federal government—the results of scientific research and methods of work which have been found to operate successfully.

(4) Increased state appropriations with the passage of the act. From the appropriation for the fiscal year 1922, 15 states were able to accept only the $5,000 unmatched funds. Six states were able to accept only the $5,000 unmatched from the federal appropriation for the fiscal year 1923. All the states cooperating under the act either have already accepted more than the $5,000 unmatched allotment from the 1924 federal appropriation, or will be able to do so. Moreover, since the maternity and infancy act became effective, 33 states accepting it have made definite increases in their own appropriations for the welfare of mothers and babies.

State activities under the act have included the employment of physicians, public health nurses, dentists, dietitians, health teachers and social workers, on staffs of health departments; education of the public through lectures, demonstrations, exhibits, films, etc.; maternity consultations or centers; mothers' classes, correspondence courses and other forms of educational work for mothers; training and supervision of midwives; health conferences; dental clinics; nutrition classes; inspection of maternity and children's homes. Much of the work has been directed toward taking to the rural mother and baby the health facilities which the city mother has had for some time.

A NEW PLAN FOR RURAL-SCHOOL AID IN NEW YORK

AT the annual session of New York state superintendents at Albany last week, a new plan was presented for equalizing education facilities for the cities, villages and rural districts of the state, and the tax burdens for meeting the expense. This plan provides another solution for the problem which the rural school bill, defeated in the last legislature, was designed to solve. The authors are four professors of Columbia University, Professors George D. Strayer, R. M. Haig, Paul R. Mort and J. R. McGaughy.

As reported by the New York *Sun*, the school superintendents voted to request the State Department of Education to invite all education groups to discuss the feasibility of the plan and to present their views to the legislature. The suggestion was made that the editor of the *Rural New Yorker*, who fought the rural school bill, and representatives of the State Grange be invited. It was agreed to leave that to the Education Department.

Professor Mort explained the plan in a paper which he read to the superintendents. He said that it would necessitate an increase in the state appropriation for education from $39,000,000 to $62,500,000.

"It provides," he said, "for the kind of education in the entire state that can be bought for an annual expenditure of $70 for a city or village elementary child. It places the burden of this $70 education upon the people in all communities, according to their ability to pay taxes."

No community would receive less from the state than it now receives. Only a very few would receive as little. It is of interest to note that although no attempt was made to help the financial situation of cities as such, nearly all cities would receive more than at present, simply by the requirements of the principle of equalization of educational opportunity. Some would receive three times as much state aid as at present. Only two large cities, Albany and Buffalo, would receive no appreciable increase over what they now receive. Of the first and second class cities, Schenectady would receive an increase of approximately $350,000; Syracuse, Utica, Binghamton and New York City each would receive an increase of approximately $200,000; Rochester and Troy, $150,000.

The state would provide $62,500,000 of the $135,000,000, the total cost of a $70 education throughout the state. This is the smallest fund to meet the requirements. If it were possible to decrease the aid to wealthy communities a much smaller fund would be sufficient—as little as $35,000,000. But equalization of opportunity and burden is as surely attained by the proposed plan.

DECISION OF THE SUPREME COURT ON OKLAHOMA SCHOOL APPROPRIATIONS

THE Supreme Court of Oklahoma has handed down a decision validating the payment of state aid totalling $650,000 to schools needing help under the provisions of a bill of the State Legislature, entitled "An act providing aid for weak school districts."

This fund will benefit 1,065 schools which

were not able to complete their regular terms on the sums yielded by their full 15-mill levies. The number of pupils attending these schools was 176,800. An average of six and one half weeks was added to the terms of the schools, bringing them up to at least an eight-months term. It is reported that 5,200 teachers will now receive payment on salaries due last year.

Action against the payment by the state treasurer to schools under the act providing aid for weak school districts was begun in the District Court of Oklahoma by Fred L. Miller, who asserted that the act violated the provisions of the state constitution and was therefore void. The lower court sustained the defendant's demurrer to the plaintiffs' petition and dismissed his action. Mr. Miller then appealed to the Supreme Court.

In its decision the Supreme Court reviewed the plaintiff's contention that "the moneys appropriated by the act are directed to be used largely for the payment of salaries of teachers in weak school districts;" that "most of the services (of the teachers) were rendered before the date when the act took effect" and that "by this act the state assumes to pay the debts of such school districts in violation of the constitutional provision," Section 14, Article X of the State Constitution.

Quotations from the Supreme Court decision follow:

> The state had the right, in the first instance, to contract this indebtedness. In a sense it is a misnomer to label this appropriation as an aid to weak school districts. Less appropriately it is true, but not without some reason, might we designate as an aid to the state the school funds raised by a school district's own tax levy for the promotion of public school work. This we say for the very good reason that, under Sect. L of Art. XIII of the Constitution, the duty rests primarily upon the state legislature "*to establish and maintain a system of free public schools wherein all the children of the state may be educated.*" This implies an efficient and sufficient system, with competent teachers, necessary general facilities and school terms of such duration as may be necessary to properly implant in the minds of our youth such degree of learning that when the work is done they may be educated young men and women.
>
> As long as the Constitution requires public funds to be raised by tax levies equally applied to all property, the rich must thereby aid the poor, if an efficient and uniform system of free public schools be maintained throughout the state as by the Constitution required.
>
> And so we hold that under this constitutional mandate, the state legislature has the power—and, in fact, unless some other way be found to properly maintain in all parts of the state an efficient free public school system, it owes it as a duty—to appropriate from available state funds the money necessary to enable each school district to maintain a reasonable school term each year, from the point where its maximum lawful and available resources have been expended.

A PROPOSED BRANCH IN BROOKLYN OF THE COLLEGE OF THE CITY OF NEW YORK

THE renewed movement to bring about the establishment of a college branch of the College of the City of New York in Brooklyn has received the indorsement of Supreme Court Justice Thomas W. Churchill and Arthur S. Somers, both former presidents of the Board of Education and original backers of the idea of a free college for Brooklyn.

The trustees of the College of the City of New York indorsed in January the idea of a center in Brooklyn to take the place of the unsatisfactory branch for evening students now being conducted in the Boys' High School.

The letter then addressed by the Education Committee of the Brooklyn Chamber of Commerce to the trustees of the College of the City of New York expressed the belief that

> the very important work of a complete program in the evening session should be considerably expanded by the College of the City of New York in this borough, in order that our residents may have conveniences equal to those of persons living in Manhattan.
>
> Urban institutions, especially those that are publicly supported, are pledged to the policy of giving the same opportunities to workers as to the more fortunate youths who can devote their days to study.
>
> In short, modern education is adjusted to the actual, industrial situation. Unless the largest industrial and residential borough is to be deprived of real college work, it must have a college plant with complete facilities and not a part of a high school building.

President Mezes, of City College, in reply to

this communication, expressed the hope that "the appeal of the Chamber of Commerce and other citizens of Brooklyn might result in opening up to the college an opportunity of giving adequate educational service to the borough."

The resolution adopted by the Board of Trustees of City College quoted the letter from the Brooklyn Chamber of Commerce and added that "the following facts are also in point":

The college buildings on Washington Heights are now used to capacity. So great was the number of applications for admission to the college last term that especial rigor in the administration of admissions to the college had to be exercised.

Even if there had been no application from the residents of Brooklyn for a center in that borough, the college authorities would have been forced to consider the problem of providing more space for persons legally entitled to admission to the college.

During the current term 636 day session students travel over from Brooklyn, losing time and wasting energy. A center in Brooklyn would relieve the above-mentioned congestion in Manhattan, would remove the handicap of great distance from which these Brooklyn students now suffer and would no doubt bring college opportunities to other Brooklynites who are now deterred from attending the college because of the great distance from their homes and of crowded conditions in Manhattan.

All available space in the Boys' High School Building for the Brooklyn center of our evening sessions has been used and many Brooklynites who work by day and study by night have been forced to come over to Manhattan.

Others from the beginning were forced to come to Manhattan because technical and laboratory subjects could not be offered in a high-school building not equipped to carry on that work.

The total number of Brooklyn residents who attend evening sessions in Manhattan is 1,042. The total attendance in the Brooklyn center of the evening session at present is 1,033. The present potential body of evening session students who would attend a properly equipped building in Brooklyn is therefore 2,075.

The afternoon session of the college ministers primarily to teachers in the public schools. At present 1,624 Brooklyn residents are enrolled and many of them come over to Manhattan to attend courses conducted by the college in the afternoon. Much inconvenience would be saved them if there were a well equipped center in Brooklyn.

It will cost something to establish a center of the college in Brooklyn, but such a course would be the most economical method to meet the present situation. A student body of sufficient size to permit of economical administration would be formed from the start by the transfer of students from the Manhattan buildings to the Brooklyn center. This is true for day session, afternoon session and evening session students.

The resolution also points out that members of the faculty already on the college pay roll could be assigned to care for the Brooklyn classes and that "all overhead supervision and expenses would be reduced to a minimum."

The trustees constituted themselves a committee composed of the chairman of the board and the chairmen of the various standing committees to confer with the Brooklyn Chamber of Commerce and other civic bodies and individuals interested and to take the proper steps to present the matter to the Board of Estimate and Apportionment "with a view to securing, if it meets their approval, an appropriate site and buildings."

One of the most important steps will be taken at the next session of the state legislature, according to present plans, when a second attempt will be made to secure the passage of a bill extending the powers of the City College trustees so as to permit them to start a center in Brooklyn.

THE SURVEY OF THE UNIVERSITY OF PENNSYLVANIA

PREPARATORY to beginning its forthcoming endowment campaign, the University of Pennsylvania is conducting an educational survey under the direction of Dr. F. J. Kelly, dean of administration at the University of Minnesota. In announcing the survey, President Josiah H. Penniman stated that Pennsylvania was the first great educational institution in the east to adopt the method of survey by outside specialists, the scientific procedure employed by business organizations to keep their methods and plant abreast of the best modern practice.

The purpose of the survey is to disclose the effectiveness of the university's educational and administrative organization and the adequacy of her buildings, equipment, faculty and financial resources for providing the highest type of instruction and research and to enable the university to formulate a far-seeing program which will enable it in the future to keep abreast of

educational advances and maintain its eminent position among American universities.

The board of trustees, acting upon Dr. Penniman's recommendation, authorized the undertaking of such a survey. After an exhaustive canvass of the field in order to secure the most noted independent authorities on university administration, the university invited Dr. F. J. Kelly, dean of administration at the University of Minnesota, to direct the survey, and selected Dr. S. P. Capen, chancellor of the University of Buffalo, and Dr. George F. Zook, specialist in higher education, with the United States Bureau of Education, as the other members of the survey committee.

Dr. Kelly states that the survey will involve the collection of data on the extent of use of buildings for lectures, recitations, laboratory or office purposes; the size of classes, the teaching load; salaries, and the research and other scholarly contributions of faculty members. It will involve also extensive conferences with members of the university on educational significance of the facts thus revealed and on related problems of university policy. From this there will be prepared a thorough report as to the effectiveness of the university's educational services, together with recommendations for the formulation of the university's program for the future. It is expected that this report will be completed and submitted to President Penniman by about December 1.

EDUCATIONAL NOTES AND NEWS

THOMAS W. BICKNELL, distinguished for his services to education, more especially in the organization of The National Education Association and the National Council of Education, recently celebrated his ninetieth birthday.

DR. JAMES LUKENS MCCONAUGHY, since 1918 president of Knox College and previously professor of education at Bowdoin College and Dartmouth College, has been elected president of Wesleyan University, to succeed the late William Arnold Shanklin, who resigned in September of last year.

DR. GEORGE DANIEL OLDS, professor of mathematics, who has been acting president since the enforced resignation of President Alexander Meiklejohn, will be inaugurated as the ninth president of Amherst College on November 14.

DR. GEORGE WILLARD FRASIER will be formally inducted into office as president of Colorado State Teachers College at Greeley on Friday, November 21.

DR. WILLIAM M. W. SPLAWN, who became on August 1 the president of the University of Texas, received the degree of M.A. from Yale University in 1914 and the Ph.D. in economics and history at the University of Chicago. He was dean of Baylor College and professor of economics there when, in 1919, he went to teach at the University of Texas. In 1923, while professor of economics and chairman of that department, he became a member of the railroad commission, in which work he was engaged at the time of his election to the presidency of the university.

HARRY L. DURHAM, for six years superintendent of schools at Whitewright, Texas, has been elected president of Burleson College, Texas, to succeed Dr. F. M. McConnell. President Durham holds the degree of master of arts from Baylor University, where he has taught in the summer school for three years.

THE new principal of the Montclair, N. J., State Normal School is H. A. Sprague, who has served as city superintendent of schools at Summit, N. J., since 1918. He succeeds the late Dr. Charles S. Chapin.

MISS JESSIE STAEGER has been appointed director of the State Normal School at Lima, Ohio, to succeed Miss Ilo Maddox, who recently resigned.

THE honorary degree of doctor of laws was conferred on Charles E. Hughes, secretary of state of the United States and formerly governor of New York, by the University of the State of New York at the closing session, October 17, of the convocation meeting at Albany, at which Mr. Hughes gave the principal address.

AT the exercises in celebration of the inauguration of plans for the founding of Lafayette College one hundred years ago and the completion of fifty years of service by Dr. Edward Hart, professor emeritus of chemistry in the college, the honorary degree of doctor of sci-

ence was conferred on Dr. Edward F. Smith, formerly provost of the University of Pennsylvania, and the doctorate of laws on Dr. Hart. A silver loving cup was presented to Dr. Hart following a dinner given in his honor. The chief speakers at the celebration were Dr. Edward F. Smith, Dr. William S. Nichols, president of the General Chemical Company; Dr. Harvey W. Wiley, formerly chief of the Bureau of Chemistry of the U. S. Department of Agriculture, and Dr. Bradley Stoughton, of Lehigh University.

DR. JOHN C. ROLFE, professor of Latin in the University of Pennsylvania, who represented the university last May at the seventh centennial of the University of Naples, is the recipient of a medal given by the University of Naples to commemorate the event.

ON account of the publicity given to the recent divorce proceedings of Professor Alfred Hall-Quest, his resignation has been requested by the trustees of the University of Pittsburgh where he was recently appointed director of extra-mural instruction. The students of the University of Pittsburgh are said to support Professor Hall-Quest, and it is reported that a movement for his recall to that institution has been started among the students of the University of Cincinnati.

JOHN C. TOBIN, vice-president of the Board of Education of the city of St. Louis, has been nominated for president of the board.

HENRY A. MORSE, assistant treasurer of the Massachusetts Institute of Technology and a term member of the corporation until last June, has been elected a life member.

HIRAM BINGHAM, professor of Latin-American history in Yale University, who now holds office as lieutenant-governor of Connecticut, is the Republican nominee for the post of governor.

FRANKLIN S. BILLINGS, who has just completed a term of three years as director of the Harvard Alumni Association, has received the Republican nomination for governor of the state of Vermont.

PROFESSOR RICHARD LANSBURGH, of Swarthmore College, former professor of industry at the University of Pennsylvania, has been appointed state secretary of labor and industry by Governor Pinchot, to succeed Dr. Royal Meeker, who resigned, effective October 15.

PROFESSOR A. C. SEWARD, F.R.S., professor of botany and master of Downing College, University of Cambridge, succeeds the Reverend E. C. Pearce as vice-chancellor of the university.

AFTER forty years' service as medical officer of Liverpool and as school medical officer from the inception of the service, Dr. E. W. Hope has retired and is to be succeeded by Dr. A. Mussen, who is at present assistant medical officer.

THE death was recently announced of Professor Alexander Darroch, of Edinburgh University, who was chairman of the Edinburgh Education Authority and chairman of the National Committee for the Training of Teachers in Scotland. He was drowned on the Island of Jura. Professor Darroch was sixty-one years of age. Since 1903 he had been professor of education at Edinburgh University. The London *Times Educational Supplement*, in a review of his career, says that his death "will prove a serious loss to Scottish education and to pedagogy in general."

DR. ARTHUR STANLEY EDDINGTON, professor of astronomy in the University of Cambridge, is lecturing at the University of California during the present academic year.

DR. ALEXANDER MEIKLEJOHN, formerly president of Amherst College, who has been traveling in Italy, has returned to the United States.

PROFESSOR G. F. WARREN, of the College of Agriculture of Cornell University, has returned from a two months' trip to Denmark, which he made as consulting specialist in regard to the costs of production and other factors affecting Denmark and American butter for the U. S. Tariff Commission.

DR. ROBERT DAY WILLIAMS, professor of philosophy and experimental psychology at Pomona College, California, is visiting lecturer on psychology at Harvard University this semester.

EDWARD W. GARRIS, of the South Carolina State Department of Education, is absent on leave this year and is doing work for the doctor's degree at George Peabody College for Teachers. He has a scholarship given by the General Education Board.

DONALD B. PRENTICE, head of the department of mechanical engineering at Lafayette College, has been appointed dean of the college.

DR. U. G. DUBACH, professor of political science at the Oregon Agricultural College, has been appointed dean of men at the college. W. A. Kearns has been appointed director of physical education and athletics.

MISS GEORGINA LOMMEN, who for nine years was connected with the College of Education of the University of Minnesota, has been elected director of the training school of the Moorhead State Teachers College.

THE new professor of psychology and education at Tulsa University, Okla., is F. L. Tibbetts, who for the past two years has been engaged in government work at San Antonio, Texas.

E. M. CASTLEBERRY, formerly superintendent of schools at Hollis, Okla., is now professor of sociology and economics at Oklahoma City University.

AT Boston University Professor Charles E. Bellatty becomes head of the vocational department in place of Professor Harold Whitehead, who devotes his entire time to the department of sales relations. Professor Bellatty retains his position as head of the advertising department.

GERALD D. WHITNEY, for the past five years supervisor of industrial education of the Pennsylvania Department of Public Instruction, has succeeded G. G. Weaver as professor of industrial education at the University of Pittsburgh.

WILLIAM PENN LOOMIS, formerly state supervisor of industrial education, is the new professor of industrial education at State College, Pa.

THE board of education of Niagara Falls has reluctantly accepted the resignation of Dr. John B. Laidlaw as superintendent of schools. His resignation was caused by ill health. In the hope that Dr. Laidlaw will be able to resume his work by January 1, the board has resolved not to seek a permanent successor now, but has elected James F. Taylor, principal of the Niagara Falls High School, as temporary superintendent.

NEW superintendents in Texas schools include the following: J. M. Smith, Alvin; D. M. Russel, De Leon; R. W. Evans, Edna; W. W. Bennett, Center; W. A. Franklin, Rockdale.

NEW superintendents of schools in North Carolina include the following: at High Point, T. Wingate Andrews; at Salisbury, G. B. Phillips; at Stoneville, Owen Odum.

HARRY HOWELL, formerly superintendent of schools at Raleigh City, N. C., and more recently engaged as a book salesman, has been elected superintendent of schools at Fayetteville, N. C.

SUPERINTENDENT CHAS. W. COOKSON, of Franklin County, Ohio, has been elected to the superintendency of Urbana.

THE new principal of the Detroit Junior High School is Samuel S. Dickey, who has succeeded Frank C. Davis, resigned.

MARY EILEEN AHERN, editor of Public Libraries, 214 West Monroe Street, Chicago, has been appointed a member of the editorial council of the *Journal* of the National Education Association.

THE American Library Association Headquarter's staff at Chicago has recently been augmented by the following appointments to positions recently established: Isabella M. Cooper, formerly in charge of the Central Circulation Branch of the New York Public Library, is now editor of the new American Library Association Catalog to be published in 1925 for the fiftieth anniversary; Alice L. Jewett, New York State Library School, formerly assistant at the information desk of the New York Public Library, is general assistant to the Board of Education for Librarianship; Hazel B. Timmerman, Simmons College Library School, Children's Librarian of the Kansas City Public Library, is assistant to the Board of Education for Librarianship; Helen Burling, Grinnell College, formerly with the *Woman Citizen*, joins the staff as assistant in reading courses and adult education work.

PROFESSOR WILBUR L. CROSS, dean of the graduate school of Yale University, delivered the convocation address at the University of West Virginia on September 24.

DR. JOHN W. WITHERS, dean of the New York University School of Education, ad-

dressed the Teachers' Club of New York City on October 9.

PROFESSORS W. H. KILPATRICK and Milo B. Hillegas, of Teachers College, Columbia University, addressed the Schoolmasters' Association of New York City on October 17, on phases of the project method.

AT the recent annual meeting of the Oklahoma County Teachers, the speakers included Dr. Lewis M. Terman, of Leland Stanford University, whose subject was "What the teacher is," and Dr. Rolla M. Tryon, of the University of Chicago, who spoke on "Teaching history in the rural school."

DR. L. A. PECHSTEIN, dean of the college of education of the University of Cincinnati, addressed the New Hampshire State Teachers' Association on October 16 and 17 and the Vermont State Teachers' Association at Burlington on October 18.

PROFESSOR CHARLES SEYMOUR is lecturing this autumn at the Universities of Brussels, Ghent, Liège and Louvain on "United States diplomacy, 1912–1920" as visiting professor for 1924–1925 under the auspices of the Commission for Relief in Belgium Educational Foundation.

DR. WALLACE NOTESTEIN, professor in the history department of Cornell University, gave the annual Raleigh address before the British Academy on October 2. The subject of the lecture was "The struggle for initiative in the House of Commons in the late sixteenth and early seventeenth centuries."

THE Hotels Gibson and Sinton, facing each other, have been chosen joint headquarters of the meeting of the Department of Superintendence of the National Education Association for the Cincinnati meeting to be held from February 22 to 26.

TEACHERS of English and speech in Iowa and surrounding states will hold their annual conference at the University of Iowa at Iowa City, on October 23 and 25. Visiting speakers will include W. W. Hatfield, of the Chicago Normal College; Martha Jane McCoy, of the University of Chicago High School; Hugh Mearnes, of Lincoln School at Columbia University; Professor C. C. Fries, of the University of Michigan; Professor James O'Neill and Professor Andrew T. Weaver, of the University of Wisconsin. University of Iowa instructors who will take part in the program are Professor Hardin Craig, head of the English department; Professor B. V. Crawford, Professor W. L. Sowers, Professor T. A. Knott, Professor Frank Mott, M. F. Carpenter, Professor E. C. Mabie, head of the speech department; Professor Sarah T. Barrows, Professor Walter Trumbauer and C. W. Gray.

IN cooperation with the Massachusetts League of Women Voters, Mount Holyoke College will hold a school of politics October 29 and 30. Coming immediately before the general election, the school is designed to provide an opportunity for discussion of campaign issues and party platforms.

AT the Southwestern Ohio Teachers' Association, which met on October 24 and 25, speakers not members of the association were: Dr. George Craig Stewart, rector of Saint Luke's parish, Evanston, Illinois; Dr. Dallas Lore Sharp, professor of English, Boston University; Dr. Glenn Frank, editor of the *Century*; Dr. Caroline Hedger, Elizabeth McCormick Memorial Foundation, Chicago, Ill.; Dr. William Scott Gray, University of Chicago; Miss Gertrude Avey, Cincinnati Public Library; Mr. Gordon Hendrickson, assistant professor, University of Rochester; Mr. Paul A. Greene, radio engineer, Cincinnati; Mr. Carl T. Cotter, director of industrial education, Toledo, and Mr. Emil Rath, dean of the Normal College of American Gymnastic Union, Indianapolis.

THE annual meeting of the first district of the Michigan State Teachers' Association, to be held on October 27 and 28, will bring to Detroit State Superintendent of Public Instruction Thomas E. Johnson; Dr. E. B. Bryan, president of Ohio University, Athens; Senator Simeon D. Fess, of Ohio, and Mrs. Corinne Roosevelt Robinson, lecturer, from New York, to talk at the general sessions. Noted speakers to appear on the division meeting programs are: Aaron Sapiro, lecturer and publicist; William Mather Lewis, president of George Washington University, and Mrs. Helen B. Paulsen, noted for her work with parent-teacher associations.

A SERIES of week-end conferences on "Prob-

lems in human relationships" is being held at the Woolman School, Swarthmore, Pa., this fall. The speakers include Dr. Samuel Guy Inman, secretary of the Committee on Cooperation with Latin America; Dr. A. J. Muste, instructor in economics at Brookwood School; Paul Douglas, of the department of economics of the University of Chicago, and Professor Alexander C. Purdy, of the Hartford Theological Seminary.

Delegates from one hundred middle western schools will meet at the University of Iowa this winter for a two-day conference on honors courses, which will be held under the direction of the National Research Council. "The problem of honors courses has come to the front in American education as the result of the inrush of masses of students," said Professor C. E. Seashore, dean of the graduate college here. "About one third of the colleges and universities are now offering honors courses, more or less on paper, and the present conference is the beginning of a movement to discard that practice and establish a thoroughgoing system of honors courses in which students will be given special privileges and opportunities on the basis of their fitness and willingness to do really scholarly work of an independent character."

The World Alliance for International Friendship through the Churches will hold its annual conference in Buffalo from November 11 to 13, with speakers of international fame in attendance. The general subject for discussion will be "Contributions to world peace." Included in the list of American speakers are Dr. William P. Merrill, Dr. Harry Emerson Fosdick, Professor William I. Hull, Dr. John H. Clarke, Rabbi Stephen S. Wise, Bishop Charles H. Brent, Professor James T. Shotwell, Dr. Frank Oliver Hall, Dr. Robert E. Speer, Dr. Hamilton Holt, Dr. Samuel A. Eliot and Kirby Page. England will be represented by Sir Willoughby Dickinson, Thomas Layton, editor of the *London Economist* and director of the Economic and Financial Section of the League of Nations, and Sir Henry Simpson Lunn. Professor Julius Richter, of the University of Berlin, will represent Germany and Professor Francis Zilka, secretary of the National Council of the World Alliance in Southern Central Europe, will represent that territory.

Following the decision made at its meeting held in Chicago on September 4 and 5, the Board of Education for Librarianship plans to visit library schools in the eastern district during the two weeks beginning on October 20. It is expected that the five members of the board: Adam Strohm, *chairman*, Harrison W. Craver, Andrew Keogh, Malcolm G. Wyer, Elizabeth M. Smith and Harriet E. Howe, *executive assistant*, will make the trip. The itinerary follows:

Monday, October 20, Cleveland, Western Reserve Library School.

Tuesday, October 21, Buffalo, University of Buffalo Library School.

Wednesday, October 22, Syracuse, Syracuse University Library School.

Thursday, October 23, Albany, New York State Library School.

Friday, October 24, Boston, Simmons College School of Library Science.

Monday, October 27, New York, Library School, New York Public Library.

Tuesday, October 28, Brooklyn, Pratt Institute School of Library Science.

Wednesday, October 29, Philadelphia, Drexel Institute, School of Library Science.

Thursday, October 30, Pittsburgh, Carnegie Library School.

The Educational Institute of Scotland will be the host to the World Federation of Teachers' Associations next July in Edinburgh, Scotland. The Scottish organization has 35,000 teacher members, while the federation represents organizations numbering in the aggregate more than a million.

The first issue has appeared of *The School Parent* in its new printed form. It is the monthly publication of the United Parents' Associations of the New York schools and is edited by Mary Gilpin Armstrong. The current issue contains an appeal to parents for cooperation by Superintendent William J. O'Shea.

The will of Robert B. Hirsch, a silk merchant of New York City, who has for many years been chairman of the board of governors of the Ethical Culture School, of which Dr. Cyrus Adler is the head, bequeaths the sum of $500,000, the income of which is to be used for free scholarships in the school.

Marietta College, Ohio, receives $50,000 by the will of Catherine Andrews Mather, daughter of the first president of the institution.

THE Presbyterian Board of Christian Education has received from one of its members $100,000 for the establishment of schools of religious education. The donor secured information from a number of Presbyterian schools as to whether they were ready to inaugurate departments of religious education. He selected Maryville College in Tennessee and Trinity University in Texas as those best prepared to take the step promptly and as those most in need of stimulus from without. Each of these will receive the income of half of the fund given provided they qualify by March 31, 1926. The requirement of each college is that it shall have a total of $100,000 from other sources by that date, and that it shall then maintain a department of religious education in which there are three full-time teachers giving their time to the teaching of the Bible and related subjects. Twenty-five Presbyterian colleges have asked to have similar departments established.

THE Pomona College Founders' Day celebration, held at about twenty-five alumni centers on October 14, was the occasion of announcing a campaign for $3,000,000. To get the conditional gift of the General Education Board of $400,000, Pomona College plans to raise $800,000 before December 1. A total of $1,200,000 will be used for endowment. In addition, the alumni are undertaking to raise $200,000 for retiring allowances; $300,000 is planned for endowment for religious education, and the remaining $1,300,000 will be used for scholarships, grounds, buildings and additional equipment. The entire amount will be used to complete the equipment for the present student body, which is limited to 750 undergraduates.

THE Board of Estimate, of Baltimore, has cut more than $100,000 from the salary budget of the school board, denying pay increases of $100 each to 644 elementary teachers slated for higher pay through credits obtained in taking special college courses.

MAYOR JACKSON of Baltimore has refused to approve the plan offered by the Public School Association to amend the city charter to give the school board complete control over the public school system, and declines to ask the Public Improvement Commission to dispense with the services of Dr. George Drayton Strayer, of Teachers College, Columbia University, adviser to the commission and to the school board in designing new school buildings.

THREE professors of the University of California have been named to serve on the research committee which will conduct a survey of the elementary school curriculum of California, which is financed by the Commonwealth Fund of New York City. Those from the university who are named and who will serve under the supervision of Dr. William C. Bagley, professor of education, Teachers College, Columbia University, and director of the project, are Baldwin M. Woods, assistant dean of the university; W. W. Kemp, dean of the school of education, and A. O. Leuschner, professor of astronomy. Dr. George C. Kyte, associate professor of education, Washington University, St. Louis, and a graduate of the University of California, has been named to assist Dr. Bagley. The sum of $18,000 has been granted to carry on the work of the committee and has been placed in the hands of Will C. Wood, state superintendent of public instruction.

South Carolina Education reports that, of the 28,000 pupils in the South Carolina high schools in 1923–24, 4,542 boys and 4,846 girls came from farm homes, and 8,749 boys and 9,730 girls came from urban homes, making a total of 9,388 farm enrollment and 18,479 urban enrollment.

THE fund raised by the National Committee of the United States for the Restoration of the University of Louvain now amount to 6,750,000 francs. New York heads the list of states with donations of $204,000, followed by the District of Columbia, with $115,000; Massachusetts, $64,400; Connecticut, $20,300; Ohio, $15,500; Pennsylvania, $12,600; California, $10,700; Maryland, $5,000 and Rhode Island $4,000. Yale alumni and students have given $40,279; Harvard is second with $38,975, and Columbia third with $13,452.46. The United States Military Academy gave $5,651, the United States Naval Academy $4,722, and Princeton University $4,187. Public schools in New York City gave $37,927 to the fund.

THE University of Pavia has addressed to all the great seats of learning in the world an announcement of the centenary celebration of that

university, which is to be held in May, 1925. That date will mark eleven centuries from the day in the year 825 on which Lothair, King of Italy, with Capitulary of Corte Olona, reorganized the schools, designating Pavia as the seat of higher education for the region of Lombardy. Among the numerous masters of law who rendered the University of Pavia famous at the end of the 10th century and during the 11th, there stands out the name of Lanfranc, of Pavia, who afterwards became a Benedictine monk at Bec, and who died in 1089, Primate of England and Archbishop of Canterbury. The university and city of Pavia intend to commemorate their history next May, 1925, by raising a monument to Lanfranc, and to celebrate the eleventh centenary of the founding of the university. In her teachers—from Lanfranc to Alciato, from Valla to Cardano, from Volta to Scarpa, Monti, Foscolo, Romagnosi—the University of Pavia beholds a tradition of thought and teaching that should be devoutly carried on and on which she bases her hopes for the future.

THE *Journal* of the American Medical Association reports that the Hungarian Association for the Promotion of Higher Education has established a science saving commission in an attempt to carry on scientific work in the universities. The commission held a meeting recently in the ophthalmologic clinic of the University of Budapest, presided over by Count Albert Apponyi. Dr. Emile de Grosz, professor of ophthalmology at the University of Budapest, said that since the price of a microscope is 3,000,000 crowns, and that of a roentgen-ray apparatus from 30 to 40 millions, an experimental rabbit 40,000 crowns, and the subscription price of a German medical journal from 300,000 to 400,000 crowns, huge sums are necessary for the continuation of the scientific work carried on in the Hungarian high schools in pre-war times. Unless science receives aid, it can not survive the present adverse conditions. The commission feels that its most urgent task is the purchasing of books and periodicals, because if Hungarian scientific research remains isolated, it will entirely disappear.

WE learn from *Nature* that the University of Bombay has received a gift of government paper worth nearly £50,000 for the endowment of university scholarships for Mohammedan students going to foreign countries for higher studies in medicine, philology, ancient history, Arabic, architecture, town-planning and technological and industrial subjects, and in preparation for government service. An interesting feature of the scheme is that the scholarships are to be considered as advances repayable with interest when the scholar obtains regular remunerative employment. The donors are the trustees of the educational trusts founded by Sir Currimbhoy Ebrahim and his daughter. We regret to record that Sir Currimbhoy, who has for many years been associated as a generous patron with numerous educational enterprises, especially Moslem schools, colleges and orphanages, and the Institute of Science of Bombay, died on September 26 at the age of eighty-five years, shortly after the announcement of his munificent gift.

THE government of Holland plans to open a new university at Weltevreden, Java, to meet the necessity of educating the millions of Indian people who, under its guardianship, must learn how to govern themselves as a step toward independence. The new university, according to the *Christian Science Monitor*, will be opened with six ordinary and three or four special professors, to be nominated by the Indian government, with exception of the rector magnificus, who will be appointed by the Netherlands government. The first rector magnificus is to be Dr. A. H. M. J. van Kan, the Leiden professor in Roman Law. The program for the first year includes law, ethnology, sociology and Indian languages. The object is to make the training equal to that in Holland. The project of the university has been drawn up by Professor Paul Scholten, of the University of Amsterdam. He went to Java last January and has now gone back there to complete his preparatory work. The present Governor-General, Dr. Fock, is a warm supporter of the plan, as is also Dr. Creutzberg, member of the Indian Council (Raad van Indie), who was interested in it as early as 1920 when he was director of instruction in Java. It is expected that students will at first be mainly Europeans; the university is, however, intended principally for the inland population, among whom the pressure for higher education has become very keen.

THE League of Nations Union has been asked

by American educational organizations to find schools in England, Wales and Ireland, which are willing to undertake an interchange of correspondence between pupils. Schools that wish to accept this offer should write to the secretary, League of Nations Union, 15, Grosvenor-crescent, S. W. 1, giving particulars of school, number and ages of pupils, and names of those nominated for this international correspondence.

SPECIAL CORRESPONDENCE

PLAN OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE TO STUDY "THE PLACE OF SCIENCE IN EDUCATION"

THE American Association for the Advancemen of Science is undertaking to carry out a study on the proper place of science subjects in general education, with special reference to American school curricula and to social objectives. This project was authorized by the council of the association at the third Cincinnati meeting, in December, 1923, and a special committee was authorized to take charge of this important investigation.

Purpose and Support

The committee wishes to formulate an adequately descriptive statement of the purposes and plans now in use in American education and of aims and improvements that seem worthy of serious consideration. This movement has originated from the thought that the unprecedented recent development of the sciences and the rapid introduction of scientific knowledge and scientific thinking into every-day life make it highly desirable that such a statement be formulated, to hasten the spread of a general understanding of the functions of science in modern education. The committee is charged with the responsibility of investigating this whole question and reporting on it at an early time. While the results of this study may not be as definite and as thoroughly based on scientific records, observation and experimentation as would be ideally desirable, yet it is hoped that a report may be prepared, based on the constructive thought of many competent persons, that may prove very valuable, possibly forming a conspicuous mile-stone in the progress of American education.

Through its director, Dr. Max Farrand, The Commonwealth Fund of New York City has granted to the American Association for the Advancement of Science a fund to aid this work, the money to be used for paying travel expenses incurred by the committee members in attendance at called meetings.

Those interested in science education and in the part that science is playing and will play in American civilization and in our national welfare will cordially welcome the inauguration of this study under the auspices of the American Association for the Advancement of Science.

Existing Reports on American Science in Secondary Schools

In the Report of the Committee of Ten of the National Education Association published in 1893, there appeared definite statements of objectives and lists of recommended science subjects. This report was highly valuable and it served its purpose for a time, but it was eventually superseded in practice and it finally became less than an adequate record of actual accomplishment.

In 1913 a committee of fifty science teachers, under the auspices of the National Bureau of Education, began work on a revision of secondary-school science studies. Its report was published in 1920 as Bulletin 26 of the United States Bureau of Education, and was widely distributed. The purposes, outlines of subjects and sequences of subjects, as presented in that report, were based upon practices then in use in the more advanced school systems. Since the report was issued the types of courses and sequences advocated have become fairly common. Nevertheless, limitation in available time of pupils, in which they may take science, and limitation in availability of teachers with desired preparation, have probably prevented many pupils from securing as much instruction in science or the kinds of instruction thought desirable. Furthermore, the failures of the content, method and organization of science courses to respond to the most pertinent needs of modern social, industrial and esthetic uses is thought to have kept some of the objectives of the report from being as widely realized as was expected.

It seems likely that the report to be prepared

by the present American Association for the Advancement of Science committee may deal not only with this problem of elementary and secondary education through school curricula, but also with the problems of science teaching in American colleges, with the social and industrial aims and interpretation of scientific research and with the problem of a proper popularizing and socializing of science knowledge.

The American Association for the Advancement of Science committee requests that all who are interested will make suggestions regarding the plan to be followed in the projected investigation, purposes, means, limitations, worthwhileness, etc., and also regarding men and women who might probably make distinct contributions to the work in hand.

OTIS W. CALDWELL, *Chairman*,
The Special Committee on the Place of Science in Education
425 WEST 123RD STREET,
NEW YORK, N. Y.

DISCUSSION

PREPAREDNESS AND HIGH SCHOOLS

RECENTLY a contributor to SCHOOL AND SOCIETY, under the above title, ventured serious objections to military training in the high schools. He expressed fears lest the American high school lend itself to schemes and plans for military preparation which might be as odious as those of Prussia before the World War. The apparent assumption is that peace can only come through teaching the principles of internationalism and through the avoidance of military training.

It is true that one of the fundamental prerequisites for peace is an effective desire for it in the hearts of men and women. In every country of the world there is a substantial group of citizens who abhor war, but we should not be blinded to the fact that the flames of national and racial hatreds still burn brightly. So long as there are individual and national dangers, the individual and the nation will attempt to insure against them. It is difficult to picture America in the rôle of a militaristic nation, but she has given us a classic example of the terrific losses in men and money which inevitably result from almost no military preparation. Without being jingoistic it is fair to say that worthy citizenship could well include a willingness to fight for the honor of a country when that country is menaced.

Only those who have been in active service in a war can appreciate just what a modern war can mean. It is one of the most loathsome things imaginable. But the fact that a nation makes but little military preparation for a war does not necessarily mean that war will be avoided. The United States has not in the past avoided war even though woefully unprepared. Will absence of preparedness keep it out of wars in the future?

A fire department is never so fully appreciated as when one's home or business is on fire. The lack of preparation of the American troops in France was appalling. I was one of those selected to uphold the honor of the country. My hurried preparation for battle conditions is interesting in that it is somewhat typical of much of the scant training accorded our citizen soldiers. After entering the service, I was hurried from one big camp to another and inside of seven weeks found myself on board a transport for France. Landing in France early in July, my division was in their first big battle in September. Attached as I was to division headquarters, I was soon put to distributing ordnance of all kinds very near the front. Had a vigorous counter attack at any time rolled back our lines, my own position as a possible combatant would have been unenviable, for I had never even had target practice in camp, nor had I ever fired one of the many types of guns which I was continually issuing to the troops. My own brother with almost as inadequate a preparation was killed at the front while with the infantry of another division. The American battle casualties were appalling and could have been greatly reduced had our soldiers had a little more training.

I had for a long time very little respect for the "regular" soldier, but now that I know how they bear the brunt of things for us in national emergencies, I am forced to admire them even though I do not condone their vices and faults.

There is very little danger that the high school may be overwhelmed by military training. Approximately, 15,000 high schools report annually to the Bureau of Education. While there are many conspicuously large high schools, most

of our public high schools are small, their average enrollment being less than 130 pupils. It will always be impractical to give military training in the smaller high schools because of the cost, the small number of boys, and the press of outside community interests. If clean competent officers can be secured, there should be no objection to military drill in the larger high schools. Curriculum experts claim that not only must the youth of our land be taught right civic principles but that habits of good citizenship and civic responsibility should equally be stressed. How can the country or the boy be harmed where the boy is taught the good, clean exercises of military drill and with them that obligation to defend his country if need be from menacing foes? Our present wave of youthful lawlessness and crime is coming from idle boys who have no abiding interests or sense of personal civic responsibility.

Let us strive for international peace, but let us not be too indifferent to the fact that we have had repeatedly to defend our national heritage and honor.

A. W. LOCKHART

LOCKPORT, ILL.

QUOTATIONS

THEOLOGICAL EDUCATION

THE Institute of Social and Religious Research has recently made a report of the results of an exhaustive survey of the Protestant theological seminaries in this country and Canada. It is shocking in its findings. The study was made under the supervision of a special advisory committee of highest standing and with friendly disposition, among whom were Bishop Brent, Dean Brown, of Yale Divinity School; President Stevenson, of the Princeton Theological Seminary; the presidents of several other seminaries and a number of university presidents. The officers of the institute are also men of excellent repute. All this invites confidence in the report and accentuates the seriousness of the shortcomings which they reveal.

While the number of theological students is not decreasing, many of the students in the seminaries are "mediocre men of comparatively little training." Moreover, many of the seminaries themselves "can hardly qualify as educational institutions." The record of 7,500 students, out of a total of 9,000 in the entire United States, showed upon examination that fewer than half had college degrees. Of the 161 seminaries studied some do not require for admission even high-school graduation. Indeed, few of them scrutinize carefully the academic preparation of incoming students. In many cases, it is stated, the students are men who have failed at other kinds of work.—*The New York Times.*

UNDER THE CIRCUMSTANCES

"PROFESSOR Hall-Quest, stand up!

"Did, or did not your wife, Shirley Hall-Quest, leave your bed and board, and is she not now living with another man? Aha! You admit it. Did you not thereafter, exhausting all means to persuade her to return to you, seek a divorce? We thought so! Is it not true that you failed to kill, beat, maim or otherwise maltreat the man who had wronged you, and did not in effect leave the matter to be dealt with by the conscience of the parties involved and the law, if any? So, you confess that also! Is it not a fact that your strange conduct inevitably drew the attention of the newspapers to this case and that there was considerable publicity in which the name of the University of Pittsburgh, of which you are an employee, was repeatedly mentioned? Quite so. By your own admission you are guilty on every charge. Under the circumstances"——

This is probably not an exact transcript of the remarks of the trustees of the University of Pittsburgh before they asked Professor Hall-Quest for his resignation. But they did ask for it. And now Professor Hall-Quest has lost not merely his wife, but his job.

Oh, well. "Under the circumstances," as the trustees might have said, "was either worth keeping?"—*The Tribune-Herald.*

EDUCATIONAL RESEARCH AND STATISTICS

LABORATORY COSTS IN STATE INSTITUTIONS OF HIGHER LEARNING

THE state institution of higher learning whose work demands any large degree of laboratory instruction must recognize and obtain recognition for that factor in presenting costs of instruction to the people of the state and to the

legislature or suffer a severe handicap in asking for financial support. There is perhaps no other more potent single element of differing costs between old-line university instruction and the newer type found in our land grant colleges. The laboratory element in the modern land grant college or other tax-supported institution of learning, if recognized, may be a friend; if unrecognized and allowed to remain buried in unit costs of all instruction, regardless of type, it becomes a very real menace.

It costs more to teach a student one hour in a laboratory than it does one hour in a recitation or classroom. The laboratory class is smaller, requires per member more floor space and larger capital outlay for permanent equipment, as desks, lockers, apparatus and what not, and uses up what Dean Kelley of Kansas[1] terms special maintenance funds for chemicals, materials, etc. The first factor alone, that of size of class, justifies the initial statement. Laboratory classes under one instructor are limited to from 12 to 15 students. Recitation classes under one instructor are limited to 25 or 30 students. Lecture classes under one instructor are limited only by the strength of the instructor's voice and the seating capacity available. Each student in a lecture or recitation requires approximately 10 square feet of floor space and one chair. Each student in laboratory requires approximately 26 square feet of floor space, a desk equipped with running water, gas, electricity, chemicals and adequate drawer and locker facilities, and requires, also, apparatus varying in value from a few to hundreds of dollars.[2] Each student in a recitation or lecture requires at most a few sheets of examination paper now and then; each student in laboratory work constantly requires chemicals or food or other material with which to do his work. As a result of these factors it costs more to teach a student one hour in laboratory than to teach him one hour in recitation or lecture.

Not only this, but *it costs much more to graduate a student from an institution offering more laboratory work than from an institution of similar academic standing offering less laboratory work, all other factors being equal.* Hour for hour the laboratory work is much more expensive, but toward graduation they do not count hour for hour. Paradoxical as it may seem, from a fiscal aspect, *the more expensive unit counts less.* Most institutions of higher learning require a student to furnish from two to four hours of laboratory instruction for the credit equal to one hour of recitation or lecture. Assume for one moment a hypothetical case. An instructor receives $3,300.00 for 33 weeks of teaching. Each week he teaches costs the institution $100.00 in salary. Assume that he teaches two hours of lecture, six hours of recitation and ten hours of laboratory. Each hour of his service costs the institution $5.56. The lecture classes average 100 students, the recitation classes average 25 students, and the laboratory classes average 13 students. The salary costs alone of instruction, then, per student taught one hour are, for the lecture course, 5½ cents, for the recitation work, 22 cents, and for the laboratory work, 43 cents. Is this 43 cent hour regarded as eight times as valuable as the five and one half cent hour, or twice as valuable as the 22 cent hour? It is not. In order to secure the academic equivalent of the 5½ cent hour one must multiply the 43 cent hour by three, since that is the approximate average number of such hours the student must take in order to secure the same amount of credit as accrued by reason of the 5½ cent or the 22 cent hour. Hence *the comparison must stand: 5½ cents of lecture equals 22 cents of recitation equals $1.29 of laboratory instruction.*

To this $1.29 must be added maintenance and depreciation charges on additional floor space and equipment and special maintenance expenditures incurred by the laboratory student and not incurred by the recitation or lecture student. For example, one laboratory student occupies 2.6 times as much floor space as one recitation or lecture student, and 3 times as long, for the same amount of credit. To one we must charge 10 square feet of floor space, heated, cleaned and lighted, for one hour; to the other, 26 square feet for three hours, *i.e.*, 10 against 78. Such factors must

[1] *Journal of Educational Research*, Vol. VII, No. 5, p. 412, May, 1923.

[2] The term laboratory work also of course includes all shop work with its heavy investment in equipment and large overhead charges.

more than offset the fact that frequently lower salaried men are assigned laboratory work than meet lecture or recitation classes.

This high cost of laboratory work has led some state institutions into very real difficulty. With a privately endowed college or university the type of work offered may be decided by intra-mural factors. In state institutions, particularly those of states where two or more institutions of relatively the same rank exist, the situation is different. When the educational policy of such institutions means money, extra-mural and non-educational factors very quickly become operative. And in no other conceivable way does educational policy so quickly run into money as does stress on the laboratory method of instruction as opposed to the lecture or recitation method. Peculiarly unhappy are those institutions the nature of whose work necessitates such stress on laboratory methods. For *in these days of tax economy much favorable attention may be drawn by low comparative unit costs.* To illustrate: conceive one state institution all of whose work must be laboratory, another all of whose work may be lecture or recitation. Obviously, if both have equal enrollments, the costs in the laboratory school, both in total and per unit, must be several times those in the non-laboratory institution. These necessarily higher costs *should* be good reason for increased appropriations. But actually, in practice, the type of work has been disregarded and the low unit costs have tended toward more appropriations and the high unit costs for less. The non laboratory institution can say, "Here, we educate three times as many students for half again as much money." Or, "We are educating as many students for one half the money appropriated to the laboratory school. Give us more. Surely we need it." They get it, while as a matter of fact they should be educating the same number on one third the money.

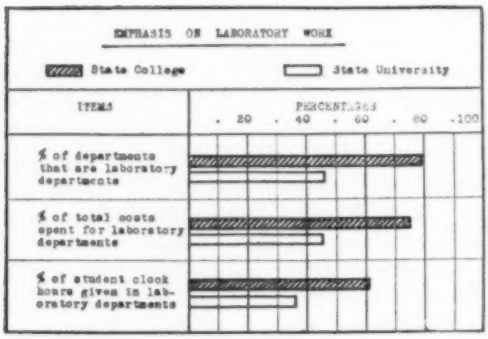
Of course no two schools are purely laboratory or purely recitation and lecture, but in most of our states where we have separate university and land grant colleges there is one institution which especially emphasizes laboratory and another which stresses more particularly recitation and lecture. Both institutions must depend fundamentally upon the legislature for financial support. In some states the matter has been partially stabilized by millages for higher education. But in most states each recent legislative session has seen the preparation of material showing why higher education must have more money. Strange as it may seem, the division of this money between land grant and other institutions seldom takes into account the laboratory factor. Hence the land grant colleges tend to suffer.

For specific illustrations of these facts the writer has chosen the situation in the state of Washington. This state is selected because of available and familiar material and because of interest in that particular state. The facts illustrated, however, are applicable not only to all higher educational institutions but also to our secondary schools. Laboratory work in high schools should be recognized as a very powerful factor in differing costs of instruction between departments and between schools.

An interesting experiment in the gathering, preparation and publication of income and cost statistics in higher education, and one that has attracted the attention of other states, has been conducted in Washington. The Joint Board of Higher Curricula of that state have for the past eight years prepared and published a report to the governor, giving the student clock hours, departmental and other costs of instruction. The separate state university and the State College of Washington, a land grant institution, vary decidedly on the stress given to laboratory work. No attempt has been made in the Board's reports to show the influence of this factor in costs nor has allowance been made for its operation in giving unit costs of instruction. But the published reports for the past year, together with the working sheets from which they were compiled, make possible its estimation. From these sources for the year 1922–1923 it appears that 77.42 per cent. of the departments of the state college gave 50 per cent. or more of their work in laboratories, *i.e.*, the students and instructors in these departments spend 50 per cent. or more of their classroom time in laboratories. At the state university, 46.34 per cent. of the departments give 50 per cent. or more of their work in laboratories. This indicates a very different stress on laboratory work. A more perfect measure of this stress is perhaps found in the student

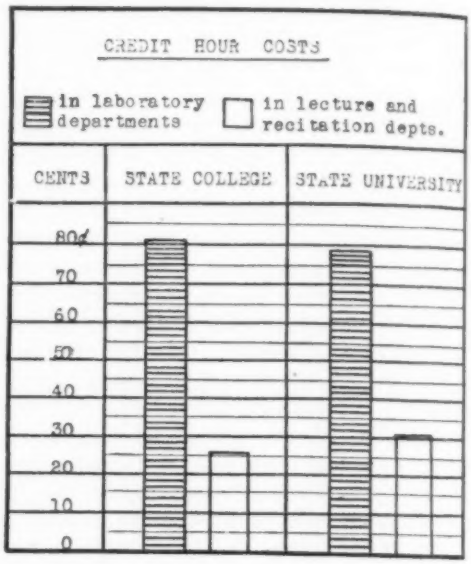
clock hours taught in such courses. At the state college 60.81 per cent. of all student clock hours taught during 1922–1923 were given in laboratory departments.[3] At the university 36.53 per cent. of the student clock hours were given in laboratory departments.

Graph I


EMPHASIS ON LABORATORY WORK
State College
State University
ITEMS
PERCENTAGES
. 20 . 40 . 60 . 80 .100
% of departments that are laboratory departments
% of total costs spent for laboratory departments
% of student clock hours given in laboratory departments

What this emphasis on laboratory instruction means in terms of money may be appreciated by considering that the average cost of a student clock hour in the 50 per cent. or higher laboratory departments at the state college was $00.4413, while the average cost per student clock hour in departments less than 50 per cent. laboratory was $00.2369. These are student clock hour costs. Student clock hours are not necessarily equal in academic value, a lecture or recitation student clock hour counting from two to four times as much as a laboratory student clock hour. To change these student clock hour costs to costs of units equal in academic value they must be multiplied by the number of student clock hours necessary in each case[4] for one credit hour. When this is done we find that *one credit hour in the laboratory departments costs an average of $00.8176, while one credit hour in the lecture and recitation departments costs $00.2610.*[5]

Graph II



Now the point of the whole matter, so far as financial support is concerned, is that in one institution, the university, the students spend

[3] For convenience in terminology all departments whose instructors and students spend 50 per cent. or more of their classroom time in laboratories are called laboratory departments. Similarly, all departments whose instructors and students spend less than 50 per cent. of their classroom time in laboratories are termed lecture and recitation departments.

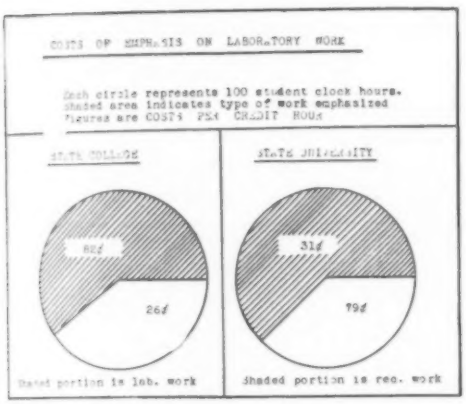
[4] In the laboratory departments of the state college an average of 1.8527 student clock hours give one credit hour. In the lecture and recitation departments an average of 1.1019 student clock hours give one credit hour.

[5] REFERENCE TABLE

Average	St. Coll.	St. Univ.
Cost per student clock hour in laboratory departments	$00.4413	$00.4017
lecture and recitation departments	00.2369	00.2698
Number of student clock hours per student credit hour in laboratory departments	1.8527	1.9559
lecture and recitation departments	1.1019	1.1414
Cost per student credit hour in laboratory departments	$00.8176	$00.7857
lecture and recitation departments	00.2610	00.3079
Percentage of students' and instructors' classroom time spent in laboratory departments	60.81%	36.53%
lecture and recitation departments	39.19	63.47

63 per cent. of their time in recitation or lecture departments at a cost of $00.3079 per credit unit while in the other institution, the state college, the students spend 61 per cent. of their time in laboratory departments at a cost of $00.8176 per credit unit. In other words, the state college gives practically the same proportion of student clock hours in laboratory departments as the state university does in lecture and recitation departments—61 per cent. and 63 per cent., respectively. The state college cost per credit unit, due to the type of work, is $00.8176. The state university cost per credit unit, due to the type of work, is $00.3079.

Graph III

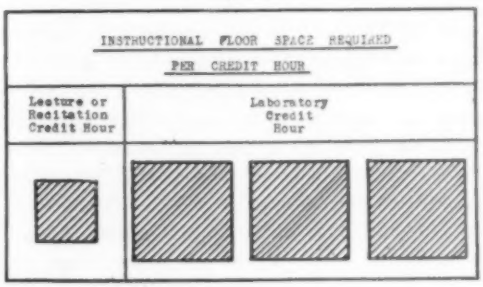

COSTS OF EMPHASIS ON LABORATORY WORK
Each circle represents 100 student clock hours. Shaded area indicates type of work emphasized Figures are COSTS PER CREDIT HOUR
STATE COLLEGE
STATE UNIVERSITY
61¢
26¢
31¢
79¢
Shaded portion is lab. work
Shaded portion is rec. work

And yet the reports do not show this at all. They show in fact only total student clock hour costs. Student clock hours are not the units which are used to measure education, academically. The student does not become a candidate for graduation at either institution by presenting so many student clock hours. He must present so many credit hours and his progress through school is measured by credit hours. *The process of higher education in Washington as in other states is measured by credit hours and the costs of that process must be in terms of the same unit.* When the costs are so measured the different types of work offered are automatically recognized, and an institution which offers 61 per cent. of its work in laboratory departments where a credit hour, by reason of the type of work, costs 82 cents, will not necessarily suffer in financial support because another institution offers 63 per cent. of its work in lecture or recitation departments at a credit unit cost of 31 cents.

These data afford specific illustration of the statement made at the first of this article, namely, that it costs much more to graduate a student from an institution which stresses laboratory work than from another institution of similar academic rank which stresses lecture or recitation work. Due to the different stress on laboratory instruction the number of credit hours per 100 student clock hours are not the same at the two Washington state institutions. At the laboratory institution 100 student clock hours gives 68.39 credit hours. At the university 100 student clock hours gives 74.29 credit hours. Yet the cost of the 100 student clock hours is greater at the laboratory institution than at the university—$36.00 against $32.00. The typical credit hour cost at the state college is $00.5280, at the state university $00.4281. This cost is 23.34 per cent. higher for the state college. The number of such credit hours necessary for graduation are 6.67 per cent. higher at the state college.[6] Hence the cost of graduating a student from the land grant college is 132 per cent. that of graduating one from the old line university.

In this connection the effect of laboratory work on the building needs of an institution must be noted. The unit of floor space required per credit hour of lecture or recitation work was given as 10, the unit of floor space required per credit hour of laboratory instruction as 78. Given the same enrollment, a purely laboratory institution would require approximately eight times as much instructional floor space as a purely lecture or recitation institution.

Graph IV



[6] 128 hours for 18 weeks at the state college.
180 hours for 12 weeks at the state university.

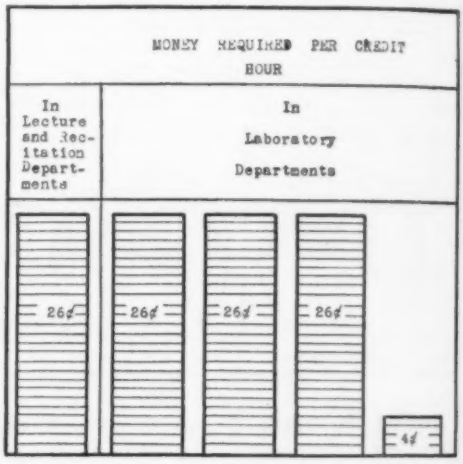
The laboratory element in the modern land grant college or other institution of higher learning, if recognized, may be a friend; if unrecognized and allowed to remain buried in unit costs of all instruction, regardless of type, it becomes a very real menace.

It may be that certain readers of this material will question the validity of the reasoning given on the grounds that the land grant college is more expensive regardless of the fiscal unit of measurement. In other words, that even if the land grant colleges and the universities offered the same type of work or the same proportion of types, the cost per unit would still be high at the land grant institutions. This is probably not the case except so far as larger numbers may tend to reduce educational costs. Referring again to the Washington figures, the lecture or recitation courses cost an average of \$00.2369 per student clock hour at the state college and \$00.2698 at the state university; this in spite of the fact that the university enrolls more than twice the number of students. On the other hand, the laboratory courses cost per student clock hour was at the state college \$00.4413, at the state university \$00.4017. In other words *the cost in the two types of institutions in Washington for the same type of work are approximately equal,* lecture and recitation work being given 3.29 cents cheaper per student clock hour at the state college, and laboratory work being done 3.96 cents cheaper per student clock hour at the university.

Again the objection may be raised against terming a course in which the students and instructors spend 50 per cent. or more of their classroom time in the laboratory, a laboratory course, and terming a course in which the students and instructors spend less than 50 per cent. of their time in laboratories a lecture and recitation course. Some line must be drawn between a laboratory and a non-laboratory department and the one chosen seems fair, especially when one finds the median percentages of laboratory hours in the so designated laboratory courses of the university and the state college within 1.55 per cent. of each other (69 per cent. hours laboratory at the state college and 67.45 per cent. at the university) and the median percentages of the recitation and lecture courses as near together as they could well be, three of seven such departments at the state college and eleven of twenty-two such departments at the state university giving no laboratory work.

The most pertinent point that this material raises, aside from showing that types of work must be considered in comparing financial needs of educational institutions, is one for experimental education and psychology to answer, namely, *is the large comparative cost of the laboratory method justified by results?* If it costs \$0.82 to give a student one credit hour of instruction by laboratory method and \$0.26 to give him a credit hour of instruction by lecture or recitation, is the laboratory credit hour

Graph V



more than three times as good as the lecture or recitation hour, or could the same instruction be given by lecture or recitation, all or any part of it? These are not questions to be answered by opinions. They call for careful, scientific, educational and psychological experimentation. Such answers or series of answers involve enough money in the high schools, endowed and state institutions of higher learning, each day of the school year, to be eminently worth finding, for in *the rapidly mounting higher educational costs of the day the changes in the type of instruction that have taken place during the past few years must be placed side by side with the increasing enrollments.*

E. E. LINDSAY

PULLMAN, WASHINGTON

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